CLAIMS

1. A method for measuring fundamental data of a lens, comprising the steps of:

illuminating the lens with a light at a predetermined angle of incidence,

measuring degree of refraction of the transmitted light that passes through the lens; and

calculating the fundamental data of the lens based upon a plurality of "angle of incidence – degree of refraction" relationships obtained by measuring the degree of refraction with respect to a plurality of different angles of incidence.

2. A method as in claim 1, wherein the calculating step comprises the step of calculating the fundamental data of the lens based upon the "angle of incidence – degree of refraction" relationships relating to at least three different angles of incidence obtained for each of the two surfaces of the lens.

3. A method as in claim 1, further comprising the step of measuring a thickness of the lens, wherein the calculating step comprises the step of calculating the fundamental data of the lens based upon the "angle of incidence – degree of refraction" relationships relating to at least two different angles of incidence obtained for each of the two surfaces of the lens and the thickness of the lens.

4. A method as in claim 1, wherein the calculating step comprises the steps of (1) representing the fundamental data of the lens as a function of a refractive index as a variable, based upon the "angle of incidence – degree of refraction" relationships relating to at least three different angles of incidence obtained for one surface of the lens, and (2) calculating the changes in the fundamental data at each measurement point by substituting appropriate numerical values for the refractive index.

5. A device for measuring the fundamental data of a lens, comprising:

means for illuminating the lens with light at a plurality of different angles of

incidence;

means for detecting transmitted light that passes through the lens; and

a processor in communication with the illuminating means and the detecting means, the detecting means communicating signals corresponding to the transmitted light to the processor, wherein the processor (1) causes illumination of the lens with the light from the illuminating means at the predetermined angle of incidence, (2) calculates the degree of refraction of the transmitted light that passes through the lens based upon the output signal of the detecting means, and (3) calculates the fundamental data of the lens based upon a plurality of "angle of incidence – degree of refraction" relationships obtained for a plurality of different angles of incidence.

6. A measurement device as in claim 5, further comprising means for displaying the fundamental data calculated by the processor.

7. A measurement device as in claim 6, wherein the displaying means displays a graph showing the relationship between the movement of measurement points occurring when the measurement points are moved in the predetermined direction on the surface of the lens and the respective changes in the fundamental data.

8. A measurement device as in claim 5, wherein the illuminating means comprises a light source and a means for changing the optical distance between the light source and the lens.

9. A measurement device as in claim 8, wherein the changing means moves the light source in the axial direction, thereby changing the optical distance between the light source and the lens.

10. A measurement device as in claim 8, wherein the illuminating means further comprises a condensing lens disposed between the light source and the lens, wherein the changing means changes the position of the condensing lens in the axial direction, thereby changing the optical distance between the light source and the lens.

11. A measurement device as in claim 8, wherein the illuminating means further comprises a plurality of condensing lenses with different refractive powers, wherein the changing means selectively disposes any of the plurality of condensing lenses between the light source and the lens, thereby changing the optical distance between the light source and the lens.

12. A measurement device as in claim 5, wherein the illuminating means comprises a plurality of light sources disposed in a plurality of respective positions with different distances from the lens, and a reflective mirror for illuminating the lens with light from any of those light sources.

13. A measurement device as in claim 5, wherein the illuminating means illuminates the lens at no less than two of the three different types of illumination angles: divergent light, parallel light, and condensing light.